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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,143	10/13/2005	Giacomo Gorni	05788.0347	2105
22852 7590 10/05/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER RAHLL, JERRY T	
			ART UNIT 2874	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/529,143

Applicant(s)

GORNI ET AL.

Examiner

Jerry T. Rahl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 24-28,31 and 33-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-28,31 and 33-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 30, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 24-28, 31, and 33-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,091,870 to Eldada in view of US Patent Application Publication No. 2004/0022489 to Nesnidal et al. and "Understanding Fiber Optics" by Hecht.

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5. Regarding Claim 24, Eldada describes an integrated optical device including first and second integrated waveguides (22, 24) in optical coupling relationship at first and second spaced apart coupling regions (26, 28) and having uncoupled waveguide sections between the coupling regions (see Figure 2), and first and second modulated refractive index structures (32), each formed along a respective uncoupled waveguide section with pairs of regions having a first refractive index and second refractive index regions adjacent to each other. While Eldada does not describes a pair of the regions as a transmissive pair for a pass band with reflective pairs for reflecting optical signals within a stop band, for the grating structure described by Eldada to function to isolate a band of wavelengths (see Eldada at Column 1), there must be such a transmissive pair regions in the described grating. The grating of Eldada functions to pass an input multiplexed signal (while adding and dropping some signals) all of the grating sections must be transmissive to some wavelengths in the pas band, while some (if not all) are also reflective of certain wavelengths in the pass band.

6. Eldada does not specifically describe the pairs of regions of different refractive index comprising a portion of the uncoupled waveguide and a gap formed in the uncoupled waveguide with a 1.5% difference between the refractive indices of the regions. Nesnidal et al. describes waveguides having index structures (10), each formed along a waveguide with regions having a first refractive index (16) and second refractive index (20) adjacent to each other, where the regions of different refractive index comprising a portion of the uncoupled waveguide and a gap formed in the uncoupled waveguide with a 1.5% difference between the refractive indices of the regions (see paragraphs 0006 and 0019-0022). At the time of the invention it would have been obvious to one of ordinary skill in the art to use the grating structure of Nesnidal et al. in the

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device of Eldada. The motivation for doing so would have been to improve filtering ability of the Eldada structure (see Nesnidal et al. at paragraph 0007).

7. Further regarding Claim 24, neither Eldada nor Nesnidal et al. specifically describe a dimension varying between the dimensions of the light transmissive pairs of regions in a propagation direction. However, varying a dimension of light transmissive regions along a light propagation direction is well-known in producing chirped grating structures (see “Understanding Fiber Optics” at Pages 162-163). At the time of the invention it would have been obvious to one of ordinary skill in the art to create the gratings of the combined Eldada and Nesnidal et al. in a chirped form. The motivation for doing so would have been to compensate for chromatic dispersion (see Hecht at Page 163).

8. Regarding Claims 25 and 26, Nesnidal et al. describes the percentage difference greater than 50% (see paragraphs 0006 and 0019-0022).

9. Regarding Claim 27, Eldada describes the waveguides comprising a core (10) and a cladding (6,8). Further, Nesnidal et al. describes the waveguide comprising a core (16) and a cladding (12), where the gap (20) extends across the entire cross section of the waveguide section.

10. Regarding Claim 28, Eldada describes interference between the regions of different refractive index arranged orthogonally to the light propagation direction of the waveguide sections (see Figure 2).

11. Regarding Claim 31, for Eldada to function as an Add/Drop Multiplexer device, it must inherently have the pass band functionality described by present claim 31. If it did not, the Add and Drop functionality would be compromised due to unwanted signals being passed.

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12. Regarding Claim 33, Eldada describes the transmissive pairs having the same optical length in the light propagation direction (see Figure 2, where grating 32 is shown by uniformly spaced sections).

13. Regarding Claim 34, the chirped gratings of the combined device have pairs with varying optical lengths in the propagation direction (see “Understanding Fiber Optics” at Page 163).

14. Regarding Claims 35 and 36, since the grating of Eldada functions to pass an input multiplexed signal (while adding and dropping some signals) all of the grating sections must be transmissive to some wavelengths in the pas band. Therefore, the number of intervening pairs between adjacent transmissive pairs varies depending upon selection of which grating segments are considered “transmissive” pairs.

15. Regarding Claim 37, Eldada describes the optical coupling regions having coupling factors approximately equal to 50% (see Column 5 Lines 25-40).

16. Regarding Claim 38, Eldada describes the first and second modulated refractive index structures located along the uncoupled waveguide sections in identical positions respective of the first coupling region (see Figure 2).

17. Regarding Claim 39, Eldada describes the first waveguide having a first input section (34) adjacent the first coupling region (26) and the second waveguide having first (36) and second (38) output sections, respectively adjacent the first and second coupling regions, and further comprising a first optical path from the first input section to the first output section, the first optical path propagating from the first input section to the first output section a first optical signal (Output(Pass)) with wavelength in said pass band; and a second optical path from the first input section to the second output section, the second optical path propagating from the first

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input section to the second output section a second optical signal (Output(Drop)) with wavelength in said stop band but outside the pass band.

18. Regarding Claim 40, Eldada describes the first waveguide further comprises a second input section adjacent the second coupling region (40), and the device further comprises a third optical path from the second input section to the second output section, the third optical path propagating from the second input section to the second output section a third second optical signal (Add) with wavelength in said pass band.

19. Regarding Claim 41, Eldada describes an add/drop device comprising first and second optical device as described above connected in cascade and having differential pass bands (see Figures 12-14). Further, a recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. In re Hutchinson, 69 USPQ 138. The structure of Eldada is capable of performing the described functions of the current claim.

20. Regarding Claim 42, Eldada describes the second output of the first device coupled to the first input of the second device (see Figures 12-14).

21. Regarding Claim 43, the above-described device of Eldada, Nesnidal et al., and Hecht are an embodiment of the method of the current claim.

22. Regarding Claim 44, the cutting of the waveguide section described by Nesnidal et al. is a one-step process (see Pages 2-3). Therefore, forming the grating structure of the combined device would include the cutting simultaneously in the uncoupled waveguide sections.

23. Regarding Claim 45, Nesnidal et al. describes using a mask to define the cuts and electively removing sections according to the mask (see paragraph 0021).

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24. Regarding Claims 46 and 47, Nesnidal et al. describes filling the gaps with air (see paragraph 0021).

***Response to Arguments***

25. Applicant's arguments filed July 30, 2007 have been fully considered but they are not persuasive.

26. Applicant argues that Eldada et al. does not describe "the plurality of pairs of regions compris[ing] a plurality of transmissive pairs of regions for transmitting optical signals with wavelengths within a prescribed wavelength pass band, and a plurality of reflective pairs of regions for reflecting optical signals with wavelengths within a prescribed wavelength stop band containing the pass band." However, for the grating structure described by Eldada to function to isolate a band of wavelengths (see Eldada at Column 1), there must be such a transmissive pair regions in the described grating. The grating of Eldada functions to pass an input multiplexed signal (while adding and dropping some signals) all of the grating sections must be transmissive to some wavelengths in the pas band, while some (if not all) are also reflective of certain wavelengths in the pass band.

27. Applicant further argues that Nesnidal et al. and Eldada are of unrelated technical fields. The Examiner asserts that the discussion of grating structures present in both Nesnidal et al. and Eldada constitute disclosures form the same technical field. The fact that Nesnidal et al. can relate to a very broad range of technical devices and methods does not preclude it as being of a different technical field.



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28. Applicant's arguments with respect the Examiners reference to well-known apodized grating structure have been considered but are moot in view of the new ground(s) of rejection. Please see the current rejection, above, discussing chirped gratings.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T. Rahll whose telephone number is (571) 272-2356. The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jerry T Rahll